

REMARKS

Claims 1-25 are present in this application. Claims 18-25 are added. Claims 2-7 and 15 are currently withdrawn. Of the examined claims, claims 1, 10, 11, 13, and 14 are independent claims.



Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 10, 11, 13, and 14 contain allowable subject matter. Claims 10, 11, 13, and 14 have been rewritten into independent form. Accordingly, Applicants request that claims 10, 11, 13, and 14 be reconsidered and allowed.

Claim Rejection under 35 USC 102(a) – Ikeda

Claims 1, 8, 9, 12, 16, and 17 have been rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent 6,419,338 (Ikeda). Applicants respectfully traverse this rejection.

The present invention provides an efficient approach to adjusting a correction quantity, which corrects print head position. The present invention takes into account changes in speed during the initial acceleration and the ending deceleration that occurs in a reciprocally moving carriage carrying the print head. Correction quantities vs. a base moving speed of the carriage are predetermined. The present invention adjusts the predetermined correction quantity for actual speed of the carriage detected by a speed sensing means.

For example, the present invention predetermines correction quantities dX_0 vs. reference pulse cycle T_0 . A corrected correction quantity $dX(t)$ is calculated by taking into account the sensed pulse cycle $T(t)$. (present equation 3; see specification at page 18).

Claim 1

Thus, claim 1 covers embodiments that are directed to an inkjet print device that includes, among other things, a “correction quantity determining means for

presetting a relationship between a reference moving speed of the carriage (e.g., T_0 at speed V_0) and a reference positional correction quantity (e.g., X_0) for correcting a discrepancy in an ink hitting position resulting from the ink ejection from the print head while the carriage is moving at the reference moving speed of the carriage, and for determining a positional correction quantity (e.g., $dX(t)$) for correcting a discrepancy in an ink hitting position resulting from the ink ejection from the print head while the carriage is moving at the reference moving speed of the carriage, said correction quantity determining means determining the position correction quantity from the preset relationship and from the moving speed of the carriage (e.g., $T(t)$) sensed by the speed sensing means according to the preset relationship.”

Ikeda

Ikeda also discloses an approach that enables printing during acceleration and deceleration of the print head. Ikeda’s approach involves correcting the spacing between dots during acceleration and deceleration. Ikeda discloses correction of the spacing by calculating an amount of delay based on carriage speed. Two delay values are stored in two registers.

In a section “Description of the Prior Art,” Ikeda discloses that: “During the intervals of accelerating and decelerating the carriage 102, as can be seen from Fig. 4, dots are not equally distributed on the printing paper 105. This means that a locus of a flying ink droplet is changed with respect to scanning speed of the carriage 102. That is, an ink droplet ejected from the printing head reaches a point which is displaced a distance X_1 from a predetermined point in the

direction of carriage travel.” (col. 2, lines 41-48). Ikeda discloses that this displaced distance $X1$ can be expressed based on the speed of the carriage V_{Cr1} , distance between the printing head and the sheet of paper S , and speed of the ink droplet ejected from the printing head V . (equation (2) at column 2; see Fig. 5B).

Fig. 8 of Ikeda shows an example of determining delay times. Ikeda discloses that if the ink droplet ejected from the printing head is being accelerated and is at a position 412, there would be a position 413 that corresponds to a carriage being moved at a constant velocity. In order to align position 412 with position 413, the time of starting the ejection of ink may be delayed by a time interval T_d . The time delay T_d is a value that can be uniquely determined with response to the carriage speed. Delay values in delay-setting registers are changed in real time in response to the carriage speed. (para. bridging columns 6-7).

In an example embodiment, Ikeda discloses that delay times set in delay-setting registers can be changed depending on the carriage speed calculated by measuring the cycle of the encoder pulse. Subsequently, dots to be placed on the paper are equally spaced. The claims in Ikeda indicate that establishment of the time for actuating the printing head by using delay times may be carried out in response to a position detecting signal.

Differences over Ikeda

The Office Action refers to equation (2) and Figures 5A-5C of Ikeda in alleging that Ikeda teaches the claimed “correction quantity determining means.” As mentioned above, equation (2) of Ikeda expresses a relationship between the locus of a flying ink droplet with respect to a scanning speed of the carriage in terms of a displaced distance $X1$. Ikeda does not

disclose equation (2) as being for determining a correction quantity. Furthermore, equation (2) of Ikeda does not include presetting a reference correction quantity and a reference velocity, and determining a positional correction quantity from the preset relationship and the moving speed sensed by the speed sensing means, as required by the present claims.

Thus, Applicants submit that Ikeda does not teach or suggest determining a positional correction quantity from the preset relationship and from the moving speed of the carriage sensed by the speed sensing means, as recited in the claims.

Applicants request reconsideration and withdrawal of the rejection.

CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert Downs Reg. No. 48,222 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

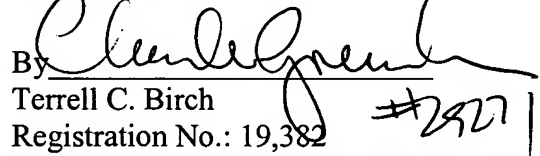
Application No. 10/520,419
Amendment dated January 26, 2007
Reply to Office Action of October 30, 2006

Docket No.: 1248-0762PUS1

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: January 26, 2007

Respectfully submitted,

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